6-15-2015

Finger Lakes Interactive Play Assessment of Implementation

Jessica Kernan

R.I.T.

Finger Lakes Interactive Play Assessment of Implementation

By

Jessica Kernan

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science in Hospitality & Tourism Management

School of Hospitality & Tourism Management
College of Applied Science & Technology

Rochester Institute of Technology
Rochester, NY
June 15, 2015

ROCHESTER INSTITUTE OF TECHNOLOGY
Department of Hospitality and Tourism Management
Graduate Studies

M.S. Hospitality and Tourism Management
Presentation of Thesis Findings

Name: Jessica Kernan Date: 6/15/15 UID#: 668008242

Title of Research: Finger Lakes Interactive Play Assessment of Implementation

Specific Recommendations: (use other side if necessary)

Thesis Committee: (1) Richard M. Lagiewski (Chairperson)

(2) Dr. Carol Whitlock

Faculty Advisor: Richard M. Lagiewski

Number of Credits Approved: 6

Note: This form will not be signed by the Department Chairperson until all corrections, as suggested in the specific recommendations (above) are completed.

cc. Department Student Record File – Original Student

Abstract

In 2014, New York State Governor Andrew Cuomo launched Path Through History, a project connecting New York's historical and cultural heritage sites. This effort aimed to benefit New York State by promoting the important historical past of New York, as well as highlighting the tourism industry and economic development throughout the entire state as a whole. One million dollars in funding was distributed among ten tourism regions throughout New York State, in an effort to assist each region in creating a unique tourism-marketing plan. This paper focuses specifically on the Finger Lakes Region and its use of the Path Through History grant funding, in conjunction with Rochester Institute of Technology (RIT). Together, the Finger Lakes Regional Economic Development Council (REDC) and RIT used the grant funding allocated to the Finger Lakes by developing an interactive mobile application called Finger Lakes Interactive Play (FLIP). FLIP is an interactive application that provides an educational scavenger hunt leading visitors throughout 12 different historical sites in the Finger Lakes Region. Visitors at each site are invited to utilize the free FLIP application, which offers games and activities like trivia questions, spot the difference, and augmented reality features. The application aims to engage visitors with unique and entertaining exercises, simultaneously promoting entertainment and education. Mobile technology can be found in almost all aspects of business, leisure, and education, including libraries, museums, and cultural sites. The purpose of this paper was to analyze the objectives and explore the effectiveness of the FLIP application, as well as evaluating the challenges and successes of implementing its marketing and promotional efforts. A case study approach was used to analyze the current strategies implemented at each of the 12 historical sites.

Dedication

To my parents Jeannette Kernan

and John Kernan

Acknowledgements

I am using this opportunity to express my gratitude to those who supported me throughout the course of this MS project. I am beyond thankful for all of the inspiring guidance that I received during the completion of this work, and am sincerely grateful to a number of people for their support as I worked to achieve this goal.

I express my warm thanks to my advisor and mentor, Rick Lagiewski, for continuously inspiring me with his support and guidance both towards this thesis and my future career goals.
He brought my class to a place in the world I had never seen before, which has left me with a new global perspective as well as memories that will last a lifetime.

Special thanks are extended to Dr. Muhammet Kesgin for his remarkable passion for teaching and travel, which has greatly impacted my experience at RIT.

I would also like to thank my close family members and friends who have provided me with the unwavering emotional support necessary to complete my studies. To my parents, Jeannette and John Kernan, whose unconditional love and support has allowed me to pursuit even my wildest dreams. Finally, I am extremely grateful to my fiancé, Sam Serpe, for all of his positive encouragement throughout this process. He was, and remains, the backbone that I needed, and I would not be in this position without him.

Table of Contents

List of Tables

List of Figures

List of Terms

AR	Augmented Reality
BMMLE	Blended Mobile Museum Learning Environment
CML	Contextual Model of Learning
DMO	Destination Marketing Organization
ESD	Empire State Development
eWOM	Electronic Word of Mouth
FLIP	Finger Lakes Interactive Play
FLREDC	Finger Lakes Regional Economic Development Council
HOG	Hidden Object Game
NYS	New York State
REDC	Regional Economic Development Council
RIT	Rochester Institute of Technology
RMSC	Rochester Museum and Science Center
TAM	Technology Acceptance Model
WOM	Word of Mouth

1. Introduction

1.1. Background

In 1977, graphic designer Milton Glaser created I LOVE NY, which became "one of the most successful advertising campaigns of all time" ("Milton Glaser: His Heart," 2011). The campaign launched in New York City at a time when the city was in economic need. In an effort to rebuild the city and it's tourism industry, the I LOVE NY branding initiative helped to play an influential role in the restoration of New York and its reputation ("Milton Glaser: His Heart," 2011). Initially, the office of economic development for NYS invested $4 million towards the rebranding campaign, with a projected $8 million in potential revenue. The campaign quickly gained worldwide recognition, generating a total of $28 million in revenue for New York during the first year alone ("Restart the Heartbeat," n.d.)

1.1.1. Empire State Development

What began as a campaign focused solely on New York City, I LOVE NY eventually developed into a representation of the entire state of New York. The office of economic development, known as Empire State Development (ESD), controls the promotion and marketing efforts across the entire state. This effort has continuously evolved since its creation in 1941, when the State Legislature created the Division of Commerce. As of 2008, Governor David A. Paterson began utilizing the ESD with efforts to join Upstate and Downstate practices, placing high importance on the fact that New York is indeed "One State." This ensures that the benefit of the entire state as a whole as well as and each of its individual regions is recognized when strategizing new development plans across the state ("History of Empire State," n.d.).

While the ESD operates New York State as a whole, each region also has the opportunity to brand them selves independently based on the unique characteristics of that region. NYS is thus divided into 11 vacation regions, each offering a list of unique activities special to that area. The regions are as follows: Chautauqua-Allegheny, Greater Niagara, Finger Lakes, Thousand Islands-Seaway, Central New York, The Adirondacks, The Catskills, Capital-Saratoga, Hudson Valley, New York City, and Long Island. Each of these regions receives inclusive statewide marketing as well as individualized marketing through the ESD and the I LOVE NY campaign. This marketing strategy allows each of the regions in NYS to form a cohesive, statewide destination brand, while simultaneously focusing on each region's personalized attractions ("Summer in NY State," n.d.).

Figure 1: New York State Regional Map

Retrieved from http://www.newyorkstatedestinations.com

In 2011, Governor Cuomo began to reconstruct the economic structure of NYS. He created 10 Regional Councils whose priority was the developmental strategies and planning that would help each region generate revenue. These Regional Councils were based on the 11 existing vacation regions listed above, placing an emphasis on Upstate New York, thus excluding New York City. The Governors goal was to create a "new New York" for future generations (*Accelerating Our Transformation,* 2012). These 10 councils were comprised of partnerships including both the public and private sectors, involving multiple stakeholders from business, academia, local government, and non-governmental groups. The main objectives of this movement included creating jobs, providing continued economic growth throughout each of the communities, and to "restore New York State as the Empire State," ("Welcome to the New York," n.d.). With funding reaching over $2 billion in the first three years of the program, each region was given the resources necessary to promote their unique characteristics and brand. With continuous funding provided every year since the launch of this program, each of the 10 regions has maintained current initiatives while continuing to build upon the groundwork created year after year ("Welcome to the new New York," n.d.).

1.1.2. Finger Lakes Regional Economic Development Council

One of the regional councils created by Governor Cuomo is the Finger Lakes Regional Economic Development Council (REDC). The REDC involves over 200 stakeholders, and is co-chaired by Danny Wegman, CEO of Wegmans Food Markets, and Joel Seligman, President of the University of Rochester. The list of additional council members from the Finger Lakes community include: William Destler, Rochester Institute of Technology President; Tom Macinski, Standing Stone Winery President; Sandra Parker, Rochester Business Alliance President and CEO; and Robert Sands, Constellation Brands, Inc. CEO. The Council's mission is

to generate at least 50,000 additional jobs by the end of 2016 (*Accelerating Our Transformation,* 2012).

The REDC notes the importance of utilizing renewable natural resources, the talents of an educated working class, and provides a strong commitment to promoting innovation and philanthropy among other things as it's vision to success. Emphasis is placed on continued success in the fields of advanced manufacturing, the arts, tourism, and basic and applied research in medicine, science, engineering, and technology. With these long-term goals in place, the Finger Lakes REDC expects to create a substantial increase in jobs, which will directly impact quality of life for its people ("The Finger Lakes REDC," n.d.). Currently, multiple state initiatives are in place to boost the tourism industry throughout New York State. These campaigns include, but are not limited to, New York Outdoors, Taste NY, and Path Through History. These developments, initiated by Governor Cuomo and the ESD, highlight tourism as a major economic development focus throughout the state (*FLREDC Announces,* 2014).

1.2. Path Through History

In 2014, Governor Cuomo launched "Path Through History," a project connecting New York's historical and cultural heritage sites. This effort aimed to benefit NYS by promoting the historical past of New York, as well as highlighting the tourism industry and economic development throughout the entire state as a whole. This initiative consists of over 200 heritage sites throughout the state of New York and seeks to attract both residents and visitors by encouraging them to explore the various sites ("Governor Cuomo Unveils New York's," 2012).

The initial Path Through History Marketing Plan released in 2012 lists five main marketing objectives: increasing traveler awareness of NYS historic sites and destinations, increasing visitation to historic sites, increasing traveler total spending, strengthening

partnerships between Pathway sites and NYS travel industry, and stimulating media to cover NYS's historic treasures and assets (*Path Through History Marketing Plan,* 2012). The Path Through History initiative offers a marketing plan, which surrounds travelers with "360 degrees of history," through events, digital media, public relations, heritage advocates, and tour development outreach. The target audience was primarily family travelers, while various marketing methods such a social media and digital itineraries were considered (*Path Through History Marketing Plan,* 2012).

The initial Path Through History initiative consisted of a $1 million marketing grant provided by the state of New York which was distributed between the 10 regions statewide. Each of the 10 regions became eligible for a $100,000 grant based on their individual marketing proposal. This was made available to help each region create a unique tourism-marketing plan. Other promotional advantages included providing a website including information about each of the locations, as well as placing over 200 road signs throughout major highways, each branded with the Path Through History logo. In addition to the uniform logo, each historical site was given a theme based on a designated list. These themes include: Arts and Culture, Canals and Transportation, Civil Rights, Colonial History, Innovation and Commerce, Native Americans, Natural History, The Revolution, Sports History, U.S. Presidents, War of 1812, and Women's Rights ("Governor Cuomo Unveils New York's," 2012).

1.3. Finger Lakes Interactive Play

This paper focuses specifically on the Finger Lakes Region and its use of the Path Through History grant funding in conjunction with Rochester Institute of Technology (RIT). Together, the Finger Lakes REDC and RIT used the allocated grand funding to develop an interactive mobile application called Finger Lakes Interactive Play (FLIP). FLIP offers an

interactive experience to users throughout 12 different historical sites in the Finger Lakes Region. These sites include: Arcade and Attica Railroad, Clara Barton House – Chapter #1 American Red Cross, Ganondagan State Historic Site, George Eastman House – International Museum of Photography & Film, Historic Palmyra, Jell-O Gallery and Museum, Medina Railroad Museum, National Susan B. Anthony Museum & House, Rochester Museum & Science Center (RMSC), Seneca Falls Museum of Waterways and Industry, Sonnenberg Gardens & Mansion State Historic Site, and the Women's Rights National Historical Park (see Appendix A for a complete list of contact information). Guests at each site are invited to utilize the free FLIP application, which offers mobile activities like trivia questions, spot the difference, and augmented reality features. The application aims to engage guests with unique and entertaining exercises, simultaneously promoting entertainment and education. (*FLREDC Announces*, 2014). At the time of this study, the application runs strictly on the Apple iOS platform, and each historical site has been provided with an iPad mini for the use of employees and visitors who do not own an Apple device.

1.4. Purpose of this Study

The purpose of this paper is to evaluate the challenges and successes of implementing FLIP's marketing and promotional efforts, as well as analyzing the objectives and exploring the effectiveness of the FLIP application. A case study approach was used to analyze the current strategies implemented at each of the 12 historical sites, in an effort to market the FLIP application to current and potential visitors. This study examines the potential for improved visitor participation and employee promotion of FLIP, through website evaluations, phone interviews, and on-site visits. This information will assist in implementing a strategy that will best suit the industry, its personnel, and guests alike. The main focus of this study is to examine

current knowledge and interest levels of those historical site and museum employees who are at the frontline of guest interaction and engagement. The 12 historical sites involved have very diverse locations, sizes, markets, and operations. Some locations are in downtown Rochester, while others are located in rural towns. Some have high levels of funding, while others work off of donations alone. Some have a large number of employees and staff, while others run primarily through the use of volunteers.

This paper aims to provide recommendations for a marketing strategy that will best promote the application throughout the diverse list of historical sites, simultaneously promoting the travel and tourism industry as a whole in the Finger Lakes Region. The goal is to strategize marketing techniques both online and on-site at the various historical sites, while emphasizing the importance of social media.

2. Literature Review

The following literature review consists of three themes: an overview of current mobile Internet trends, the impact of mobile technology on visitor experience, and marketing and branding efforts for museums.

2.1. Mobile Internet and Applications Overview

Over the past decade, the smartphone and mobile Internet device industries have quickly developed, with smartphones outselling laptop sales for the first time in 2007 (Want, 2009; Mo Kwon, Bae, & Blum, 2013). This shift in Internet usage has pushed the focus of global Internet development towards mobile devices, making PC Internet a second priority (Wu, Chen, Zhou, & Guo, 2010; Mo Kwon et al., 2013). The mobile Internet device industry is one of the few industries that continue to thrive despite the fluctuating nature of the global economy (Palumbo, Dominici, & Basile, 2013).

In addition to Internet browsing, mobile applications have become a profitable industry, offering users the ability to connect to their favorite brands, games, and networks within seconds. As of 2013, there were over 1.5 million apps in existence, and over 60 billion total smartphone and tablet applications downloaded globally (Palumbo et al., 2013). In the United States alone, roughly 119 million people own a smartphone, making up 51% of the total population of mobile phone users (Palumbo et al., 2013).

Understanding the various mobile devices and their applications can be complicated, as there are multiple platforms that devices are built upon, including iOS, Android, Blackberry, and Windows, among others. There are two main sets of criteria considered when comparing the major brands: handset sales, and usage. In 2014, Android controlled an impressive 85% of mobile phone sales worldwide, with Apple (iOS) in second place, controlling 11.9% (Spence,

2014). As of July 2014, Android offered over 1.3 million applications available for download, with Apple trailing close behind offering 1.2 million applications ("Number of apps available," 2014). There are numerous considerations to be made when looking at this data. Because the Android platform offers a variety of manufacturers (Samsung, HTC, Motorola, etc.) pricing varies and is often lower than iOS devices, which are only manufactured by Apple itself. This boosts Android sales across the globe in places where Apple suffers. In countries like the United States, however, Apple sales are much higher than the global norm. In 2014, Apple's share of the U.S. smartphone market was roughly 40%, offering a much more modest lead to Android, controlling 52% of the market (Jones, 2014). Success is not measured on device sales alone, as each platform is also evaluated based on usage levels. Studies show Apple iOS consumers are more active users, thus considering them to be more valuable users. This fact is important to companies targeting mobile device consumers, as iOS users are much more likely to download and use an application, thus providing a greater potential for revenue growth (Spence, 2014).

Creating a successful application has the potential to offer unlimited economic benefits at a set development cost (Hahn, 2012). A major struggle in creating a successful app is the fact that there are so many options available to mobile users, with new competition being created everyday. Apple's largest ad network, AdMob, says that only 5% of their free apps have over 100,000 users, while more than half have fewer than 1,000 users (Wooldridge & Schneider, 2010, p. 127). This highlights the struggle for marketers when promoting their application, who must work hard to define the target consumers and their main objectives (BonDurant, Mullen, & Chamberlain, 2012). Rob BonDurant, VP of global marketing and communications for the brand Patagonia Inc, noted that after the successful launch his company's new mobile shopping app in 2010, 98% of mobile sales came from Apple devices. The iPhone quickly became Patagonia's

most profitable mobile device, followed only by the iPad, four months before it was officially released (BonDurant et al., 2012).

2.1.1. Why People Use Applications

A major component for app developers and marketers in reaching out to potential consumers is understanding how and why people use apps. The Technology Acceptance Model (TAM) offers the basic groundwork explaining user behaviors in regards to new technologies. Fred D. Davis developed this model in 1989, with the intention to better understand the natural human acceptance of learning new technologies. He found that the two most important factors involved in gaining this understanding were perceived usefulness and perceived ease of use, noting the direct influence these factors had on a persons willingness to use a new technology. Perceived usefulness measures the users belief that their productivity will improve through the use of a new technology. Perceived ease of use measures the level of difficulty a user believes they will have when using a new technology (Mo Kwon et al., 2013).

The TAM model, although initially created to interpret employee reaction to changing technologies in the work place, is often used in the consumer environment. This environment can prove to be more difficult as consumers are able to decide with free will if they are interested in learning to use a new technology, a decision which is generally needs-based (Law, & Hsu, 2006; Mo Kwon et al., 2013). The advancement of mobile Internet and applications rely heavily on consumer readiness to learn the new technologies presented to them (Bruner & Kumar, 2005).

The literature shows several studies thus far that have referenced TAM and the importance of usefulness and ease of use in a users acceptance of new technology (Bruner & Kumar, 2005; Verkasalo, López-Nicolás, Molina-Castillo, & Bouwman, 2010). One study by Bruner and Kumar (2005) found that the enjoyment of using a device can be equally, if not more

important that the perceived usefulness of the device. The study showed that the ease of use of a device directly correlates to the level of enjoyment had while using the device. They authors note that "the fun of using a device should not come at the expense of the device being easy to use," (Bruner & Kumar, 2005).

In another study of TAM in regards to mobile application usage, Verkasalo et al. (2010) found that technological barriers have the ability to negatively affect behavioral control of a new application. The study shows that the simple task of purchasing and owning a mobile device does not guarantee that the user will use any of the features available on the device. The fact that users have control of the applications on their devices does, however, increase the likeliness that they will experiment with new technologies. This study offered a direct correlation between the intentions to use a new technology based on the perceived enjoyment of the user.

2.1.2. Types of Mobile Technology in Museums

Museums have a wide variety of options for introducing mobile technology into their exhibits. Virtual reality makes it possible for visitors to interact in real time with a computer-generated environment. Visitors have the ability to immerse themselves in a virtual environment, allowing them to view real time images, videos, and sounds on the screen of a handheld device, with the use of designated triggers found throughout the exhibit. Devices work towards seamlessly connecting the real and the virtual, allowing each aspect to work in conjunction towards an enhanced visitor experience (Raptis et al., 2005; Weng, Parhizkar, Ping, & Lashkari, 2011).

Augmented reality (AR), a type of virtual reality, allows visitors to interact with a virtual object in real time through the use of superimposed images. This advanced form of virtual reality

combines real and virtual objects into one element, allowing virtual objects to become a part of the physical exhibit (Weng et al., 2011). AR connects the virtual and physical world by overlaying graphics onto real life experiences, allowing for a unique experience that the visitor would have been unable to achieve on their own (Tsai & Sung, 2012; Hahn, 2012; Hyun et al., 2009). This feature is being used in education for museum exhibits and libraries, offering assistance in the research efforts of students. For example, students are able to use their device to help them find a book on the bookshelf, or see if their book is already checked out (Hahn, 2012). These virtual experiences affect the visitor both directly and indirectly, promoting interactivity and bringing guests closer to direct experiences than ever before possible (Hyun et al., 2009).

In a study designed to enhance the effectiveness of museum exhibitions through the implementation of augmented reality, Weng et al. (2011) found that the use of AR provided multiple benefits for the museum space. In their study, visitors were able to interact with artifacts in real time, allowing them to rotate and examine the object through AR. Additional information about the artifact was provided via virtual text boxes while using the feature. The authors found that this not only provided a more interesting method for gathering information, but also assisted with the issue of limited space available at the exhibit.

Scavenger hunts and games are another popular way to introduce museum visitors to mobile technology, while enhancing the learning experience. Problem solving games such as trivia questions and spot the difference games have the ability to connect groups of visitors with each other, while promoting the connection between exhibits and the visitors themselves. The combination of a guide and problem solving game is a positive way to promote interaction throughout groups of people and the museum space as a whole (Sung et al., 2010; Hou et al.,

2014). Another example of a game that can be productive in a museum setting is a Hidden Object Games (HOG). These provide puzzles for individual visitors to complete by joining the real exhibit with a digital overlay. Games like scavenger hunts and HOGs can provide an exciting edge to a museum exhibit, and has been shown to greatly engage visitors while improving learning methods (Tsai & Sung, 2012; Goins & Egert, 2013).

2.2. Mobile Technology and the Visitor Experience

Mobile technology is incorporated into almost all aspects of business, leisure, and education. It has gained popularity in educational areas such as libraries, museums, and cultural sites. Museums in particular have utilized audio tours for a number of decades, adding to the overall visitor experience. In 1952, the first-ever mobile audio guide was introduced at the Stedelijk Museum in Amsterdam (Tsai & Sung, 2012). In the 1990s, audio tours first began transitioning into digital mobile handsets such as PDAs, which offered visitors information while touring the exhibit at their own pace (Economou & Meintani, 2011). Since then, museums have expanded their resources to include multimedia, virtual tours, GPS, and augmented reality activities in their exhibits. With the advancement of personally owned mobile devices and the expansion of wireless Internet, many museums have recognized the benefit in incorporating new mobile technologies into their exhibits (Goins & Egert, 2013; Tsai & Sung, 2012). Mobile applications allow visitors to personalize their trip both on location and from home, while having access to a much wider range of information than traditional audio guides. Advancement in mobile technology has redefined the relationship between museums and visitors (Hsu et al,. 2006).

In their paper which described a mobile game capable of creating a “hybrid space in which new meaning could be created through player interaction,” Goins and Egert (2013) used

various game elements which combined both digital and real space. The authors note the ability for devices and their apps to greatly impact visitor experience at museum settings around the world, altering both social relationships and the physical space at hand (Goins & Egert, 2013).

A considerable amount of literature has been published on the visitor museum experience and the importance in providing resources engaging the visitor before, during, and after the visit (Hsu, Ke, & Yang, 2006; Hyun, Lee, & Hu 2009; Economou & Meintani, 2011; Tsai & Sung, 2012). Visitors leave an attraction satisfied when they feel that they received a quality service, and are also more likely to give positive reviews to their network of friends and family (Rowley, 1999). The quality of the service offered can be measured based on visitor satisfaction, which is controlled by the expectation of the visitor before entering the exhibit. Within the past twenty years, museum visitor expectations have evolved past the desire for traditional text-heavy exhibits, as visitors now desire and expect to be provided with more active, hands-on experiences (Rowley, 1999).

In their study about visitor satisfaction in regards to museum mobile applications, Palumbo et al., (2013) outline six major requirements necessary for the creation of a successful museum application. The authors state that the app should give information about how to contact the museum, as well as details on how to get to the museum. The app should incorporate a photo-gallery allowing visitors to view examples of the exhibits before visiting the museum. Also included should be a map of the museum, offering multiple tour routes and information about major exhibits. Lastly, the application should offer a user-friendly interface, and museums with a high number of foreign visitors should offer translations in multiple languages. The authors note that while each of these six methods will create visitor dissatisfaction if not included, their presence does not boost customer satisfaction as they are expected from visitors. In addition to

the basic fundamentals suggested in their study, Palumbo et al., (2013) provide further suggestions which were found to increase visitor satisfaction including: downloadable audio guides, the ability to use some features of the app offline, and offering the download for free.

Museums are now able to use mobile applications not only to guide visitors through exhibits, but also include electronic maps, links to the museum website, social media, the museum gift shop, and personal diaries for visitors. Visitors are now able to reach these resources within the convenience of their personal device, which they are already comfortable using. Now, museums are able to have a one-on-one relationship with their visitors, while promoting the potential for communities and social networks to share information, stories, and reviews (Economou & Meintani, 2011). Tsai and Sung (2012) agree that social media will greatly affect the visitor museum experience by automatically blending the experiences in their personal and social life on Facebook, Flickr, and Twitter. These sites encourage visitors to share experiences after their trip, both promoting interest and offering free marketing for the museum.

In addition to social media outreach, some possible customizable attributes include free-from customized tours, wayfinding, and bookmarking. Customized tours provide visitors with the resources necessary to create their own itineraries based on time, interest, and other influential factors through the use of wayfinding technology. This feature uses GPS to offer turn-by-turn directions for visitors creating their own route. Visitors are able to pre-plan their visit by using the bookmarking feature, also enabling them to return to stored information after leaving the museum (Tsai & Sung, 2012).

An example of wayfinding can be found in the Victoria and Albert Museum in London. In 2002, the director of projects began making the seven-mile long gallery space more easily

navigable by visitors. Alex Wood, the projects head designer, explained the addition of wayfinding technology as:

> Trying to make spaces, whether it's inside or outside, understandable for any type of visitor…What we have to do is make sure that from the outside, cohesively all the way through until they get to their destination and then back again, we give them all the information necessary to find their way and enjoy themselves as they move through the building ("V&A Podcast," n.d.).

In addition to understanding customer expectations in the museum setting, it is important to identify the interaction between mobile technology and methods of learning. In 2000, Falk and Dierking created a contextual model of learning (CML), which highlights three major factors involved in a visitor's ability to learn in the museum setting. These factors include the combination of personal context, socio-cultural context, and physical context. Based on this learning model, authors Hou, Wu, Lin, Sung, Lin, and Chang (2014) noted the importance of a blended environment, which combined hands-on learning with virtual learning in the museum setting. They referred to this method as the interactive blended mobile museum-learning environment (BMMLE). This allows visitors to combine the use of mobile devices with a physical learning experience, where both methods of learning work in unison with the other. An important aspect of this model is the introduction of a website which visitors are then able to review after the museum experience has ended.

In their study, Hou et al. (2014) measured the results of 58 college students in relation to three different types of learning methods: traditional learning, paper based learning, and mobile

learning. Each of the students were equipped with a mobile website which they were able to reference before and after the museum visit, and were asked the same 14 questions at the conclusion of the study. The mobile learning students were provided with remote access to historical information as well as an audio guide, which including a "task log," allowing users to review test questions and answers, providing an additional resource to be used in conjunction with a mobile application. The test questions measured the degree of learning that was achieved after the visit. In their findings, the authors suggest that students using the mobile learning method not only achieved the best test scores, but also were less likely to get distracted during the visit than students following the traditional or paper based learning methods. Thus, the authors state that the combination of BMMLE with related website access is the most influential way to help students learn during a museum visit. The findings also suggest that interactive problem-solving activities utilized within a blended mobile museum-learning environment are likely to promote the best learning environment (Hou et al. 2014).

2.2.1. Visitor Satisfaction

Because visitor satisfaction is heavily reliant on expectations, experience products (products dominated by experience factors) are most easily studied through first-hand visitor experiences (Smith, & Swinyard 1982; Hyun et al., 2009). This makes it difficult to conduct an experiential trial run, as each visitor has unique experiences (Hyun et al., 2009). Rowley (1999) provides recommendations for the evaluation of the total customer experience through a walk through audit. With this process, museum managers are able to focus on actual first hand experiences, rather than relying entirely on visitor responses through surveys and questionnaires. This practice is organized into six stages:

- Stage 1: Create a target customer profile

- Stage 2: Design frames (a serious of questions related to the customer experience)
- Stage 3: Execute frames
- Stage 4: Analyze the data collected from the frames
- Stage 5: Provide recommendations in a strategic plan
- Stage 6: Modify the frames accordingly

Stage three includes execution of the developed design frames. This stage involves the actual walk through audit, when the study is conducted and results are gathered. The author notes the importance that this audit takes place during pre-selected times that are unknown to the museum employees. The purpose of this audit is not to critique employees or their practices, but rather to provide first-hand data pertaining to a typical customer experience (Rowley, 1999).

In their study on determining visitor expectations in museums, Maher, Clark, & Motley, (2011) used focus groups as their method for collecting visitor data. Creating a modified form of SERVQUAL, a commonly used tool in quality of service measurement, the authors suggest 6 focus areas when analyzing visitor satisfaction levels in museums:

- Tangibles (up to date exhibits, clean facilities, well-dressed employees)
- Reliability (museum is dependable, provides services on time)
- Responsiveness (visitors receive prompt service, helpful employees)
- Assurance (visitors can trust employees, feeling of safety, employees are polite)
- Staff empathy (visitors get individual attention, employees know visitors needs)
- Organizational empathy (convenient operating hours, visitors interest in mind)

Based on their results, the authors suggest the importance of management's duty to maintain staff morale, in addition to promoting membership benefits to visitors. The goal of this

study and the six focus points was to help create lasting relationships between museums and their visitors, by interpreting all parts of the visitor experience (Maher et al., 2011)

2.2.2. Challenges Associated with the Implementation of Mobile Technology in Museums

There are challenges associated with new methodologies specifically in the field of mobile technologies. With museum provided mobile devices comes the risk of visitors spending a large portion of their visit simply learning how to use the device. Various researchers have expressed the concern that mobile tours heighten the risk for the visitor experience to become fragmented, as guests split their time between the museum exhibit, the mobile technology, and social interaction (Sharples, FitzGerald, Mulholland, & Jones, 2013; Goins & Egert, 2013; Economou & Meintani, 2011).). Because of this, it is important that visitors do not feel the pressure of strict time constraints, and are able to familiarize themselves with a provided handset and/or a new interface. This will create a more comfortable atmosphere when touring the exhibits (Hou et al., 2014).

Studies have suggested the combination of a mobile guide with problem solving exercises to maintain visitor focus (Sung, Hou, Liu, & Chang, 2010; Hou et al., 2014). Studies such as that conducted by Sung et al. (2010) have shown that problem solving mobile guides "allowed for more peer–peer and learner–exhibit interactions and concentration than the audio–visual mobile guides and the traditional learning sheets." Mobile technology has the ability to assist visitors who may only have a partial understanding of the exhibits, filling the gap with additional information and ways to view and learn it. The intended purpose of the technology is to provide complimentary information to the live exhibit, rather overshadowing the display on-site (Raptis, Tselios, & Avouris, 2005).

In a study performed on the impact of social and mobile technology on museum visitors, Charitonos, Blake, Scanlon, & Jones (2012) found the technology to be beneficial in helping students participate in museum activities, while sharing the experiences through personal mobile devices. The study suggests that students are more likely to utilize social and mobile technology as an enhancement of the overall museum experience, rather than a distraction.

Additional challenges exist between the creation and marketing of mobile media. Offering a product that will satisfy the expectations of its users and developing it for low or no cost can be difficult. In-depth research into the visitor expectation is necessary before creating an application that caters to users needs and interests (Palumbo et al., 2013). Mobile Internet offers numerous platforms with various interfaces and displays. This can make it difficult for smaller museums with less developed technical skills to advance towards mobile applications. In a study identifying 71 existing museum mobile applications, Economou and Meintani (2011) suggest that smaller museums with less employees, funding, and technical knowledge may find it more difficult to create a personalized mobile app for their exhibits. Additionally, application designers are constantly working to find new ways to use mobile media, an industry that is always changing. The goal is to find a way to keep visitors interested, while providing them with a fresh look at the exhibits (Goins & Egert, 2013).

2.2.3. Typical Visitor Types and Tours

Previous research has indicated the categorization of multiple visitor types. Raptis et al. (2005) suggested four types of typical visitor types that can be found in museums: ant visitors, who devote long periods of time to every exhibit in the museum while following a set path; fish visitors, who flock to the middle of the room and do not pay much attention to the details of each exhibit; butterfly visitors, who follow the natural flow of the exhibit while paying no attention to

set paths; and grasshopper visitors, who spend most of their time viewing a small number of specific exhibits, paying little attention to the remaining exhibits. Another similar visitor model cited from McIntyre (2004) includes: browsers, who randomly study visually appealing objects; followers, who choose a path created by the museum; searchers, who spend their time viewing specific yet similar exhibits; and researchers, who visit a museum in search of specific objects and seek additional information after leaving the museum (Naismith & Smith, 2009).

Along with multiple visitor types, there are also two different types of tour options that can be used in conjunction with mobile media. Basic linear tours offer a pre-designed structural setting, leading the visitor throughout the space while offering additional digital media with the goal of connecting one object to another. The visitor has the smallest amount of freedom with this type of tour, as they follow along exactly as they are told. Conversely, the random tour gives visitors the freedom to wander around the exhibit as they choose, with the option to view additional digital media along the way. In this case, the visitor controls his or her own tour, still with the guidance of additional information provided by the museum (Goins & Egert, 2013).

2.3. Mobile Commerce and Application Branding

The e-commerce sector has developed into what is now known as mobile commerce, or m-commerce, where mobile devices are used in the selling and advertising of a particular product or service. Benefits of this type of commerce include: the affordability and portability of mobile devices, a unique personalized experience, and a GPS location awareness feature. These benefits allow for marketing efforts to target potential buyers or visitors in a specific area who hold specific interests. The main goal is to distinguish users who are actually interested in the product or service being offered (Kurkovsky & Harihar, 2006). Travel-inspired mobile applications have grown in popularity within the past decade. In 2011, travel apps ranked

seventh on the list of most popular apps being downloaded (Mickaiel, 2011; Kennedy-Eden & Gretzel, 2012).

Mobile applications can be a powerful way for a new organization to give themselves a name, as well as allowing an organization to reposition themselves to the public. All stakeholders included must be taken into consideration when creating a new brand or a re-branding effort for an organization. Brand image, brand experience, and brand awareness make up the key components of a good branding campaign. Brand image has the potential to prove to the consumer not only who their organization is, but also what they believe in, and why they should be trusted. Additionally, brand values provide expectations for the consumer of the experience that they will have with the organization. Each consideration is made with a target consumer type in mind. It is important to focus on the target consumer, and their desired experience when creating a brand value (Bolchini, Garzotto, & Paolini, 2007).

Like traditional advertising, mobile advertising is faced with the same goals for promoting brand awareness. An advergame is an example of a new type of promotional tool used by organizations to promote their product or service. This interactive tool combines advertisements, computer games, and mobile devices, all customizable for a specific product. It has become a popular resource in the travel and tourism industry, offering a free and fun opportunity for target consumers to gain awareness of a brand. With advergame, an organization has the opportunity to provide interactive games on their website or through the use of a mobile application, with the goal of reaching potential consumers and heightening brand awareness (Çeltek, 2010). Unlike traditional "in-game" advertising, where brands are placed in popular video and computer games, an advergame has a far less complex design, and is made specifically for one brand. Due to the simple nature of its design, advergames have the capability to run on

multiple platforms such as mobile devices, webpages, and email links. Because of this, advergames are easily spread through electronic word of mouth (Cauberghe & DePelsmacker, 2010).

2.3.1. Museum Marketing and Branding

When marketing museums, the communication and delivery of that information is one of the most important aspects to consider. Traditional communication styles for museums include posters, flyers, advertisements, direct marketing, and Internet marketing. While the more traditional paper methods have become less popular, Internet and mobile marketing have continued to reach larger audiences each day (Hausmann, 2012). The Internet has the capability to influence visitor engagement in a museum. Because museums are "information intensive," meaning there is often a great deal of information available to visitors before, during, and after their visit, the Internet and mobile marketing have the potential to provide a great deal of additional information to a museum's target audience (Lagrosen, 2003).

Museums and historical sites must work to brand and market themselves as any other organization or company. As a whole, museums have steadily continued to transform into business-focused entities, feeling the pressure to run their operations with a business mentality (McLean, 1997; Kotler & Kotler, 1998; Caldwell & Coshall, 2002). For example, both the Metropolitan Museum of Art (MOMA) in New York City and the British Museum in London have employed a managing director to work side-by-side with their original museum directors. This director oversees all financial aspects of the museum and its practices. In an industry where organizations have the ongoing goal of bringing more visitors through the door year after year, managing bodies have transformed museums around the world into profitable brands, running as any other big-business would (Caldwell & Coshall, 2002).

As museums continue to build their brand equity, a term describing each of the assets that combine to form the brand, the goal is to not only generate additional visitors each year, but also to create a brand loyalty that keeps visitors coming back. This quest for the valuable brand equity also includes visitor awareness, perceived quality of the visit, and additional associations with the brand (Caldwell & Coshall, 2002). According to the literature, one challenge associated with technological brand marketing for museums is successfully providing museum employees with the knowledge necessary to utilize the technology available to promote their organization. In a study performed on online service marketing and delivery in Swedish museums, Lagrosen (2003) found that a majority of the museum managers involved in the study were un-informed on the value of the Internet and the best ways to utilize it for their company. Because museums often have large amounts of digital information at their disposal, it is important that employees are provided with the necessary instruction to put this information to use.

2.3.2. Word of Mouth and Viral Marketing in Museums

In addition to technological methods of marketing, one method that has continued to benefit museum marketing efforts is word of mouth marketing, or WOM. Because WOM offers a direct experience from one person to the next, it is considered one of the most reliable ways to transfer information (Hyun et al., 2009). Hausmann (2012) suggests that WOM guest referrals are one of the most cost-effective ways to generate brand awareness and gain new visitors. The author notes that numerous visitor surveys have suggested that personal referral is one of the most common reasons that new visitors have chosen to visit a museum. WOM marketing has become increasingly influential as social media sites continue to grow in popularity. Where traditional WOM had the ability to reach 10 additional people on average, electronic word of

mouth (eWOM) now provides an opportunity for one message to reach hundreds or thousands of people within a matter of minutes (Hausmann, 2012).

Similar to eWOM, viral marketing has been referred to as "an internet-era replacement for word-of-mouth advertising," (Modzeiewski, 2000; Phelps, Lewis, Mobilio, Perry, & Raman, 2004). Customers now have the ability to control the marketing force, proving both negative and positive feedback based on their experiences, as customers are one of the most important factors for influencing other customers. Mass media marketing has the potential to persuade individuals more successfully than one-on-one interaction (Phelps et al., 2004). Organizations attempting to create a viral marketing message must first understand what creates the viral pass-along behavior in consumers. Advertisers can then pursuit their target audience in hopes that the message will "stick" and begin to circulate throughout that person's social circle (Phelps et al., 2004). Wilson (2000) defines six simple principles of viral marketing:

- Gives away valuable products or services
- Provides effortless transfer to others (shorter is better)
- Scales easily from small to very large (must be prepared for the product to gain fast popularity)
- Exploits common motivations and behaviors (people want to be a part of what is considered popular)
- Utilizes existing communication networks (networking)
- Takes advantage of other's resources

Hausmann (2012) highlights guerilla marketing as an additional tool used by museums to create buzz and awareness. Special events and discounted pricing combined with free merchandise and mobile applications are some examples used by museums. In a study of the

impact of eWOM on German museums, Hausmann (2012) analyzed the way technology, content, and interaction played a roll for numerous museum social media sites. The technology category addressed issues of accessibility of social media pages, the use of website functions, and the integration of multiple social media sites. The content category addressed the number of photos and videos posted, as well as the transparency of the profile in response to criticism. The interaction category addressed the number of "likes" and comments on each post, the presence in conversations, and direct responses to posts. Based on the findings, the author suggests that museums trying to generate eWOM must offer a social media presence, which is updated multiple times a day with interesting information. The author also suggests that social media stimulation including polls, competitions, and questions that engage followers are influential ways to promote brand awareness.

2.3.3. The Role of the Destination Marketing Organizations in Museum Marketing

It is not solely the role of Museums and historical sites to market themselves. The main responsibility of a Destination Marketing Organization (DMO) is to promote the local economy, creating revenue and jobs for the destination as a whole. This is achieved through tourism product development, with the intention of growing visitor satisfaction before during and after the destination experience (Hyun et al., 2009). DMOs work towards marketing each of the resources available at a destination in order to create a bigger picture of all that the destination has to offer. Advanced information technology and Internet and mobile application knowledge have become resources available for DMOs to achieve this goal. Authors Hyun, Lee, & Hu (2009) recommend, "DMOs should make a conscious effort to gain competencies in adopting and understanding the mobile platform for tourism purpose."

Mobile Internet technology has the ability to create a high amount of value for a destination through the use of advanced marketing communications. DMOs that fail to recognize this necessity run the risk of falling behind in their long-term goals for the destination. There are various reasons that DMOs may not succeed in achieving these goals. If a destination does not have sufficient funding and a skilled employee workforce, it is likely that they will be unable to provide the investment necessary to keep up with mobile tourism (Siguaw, Simpson, & Enz, 2006; Hyun et al., 2009).

2.4. Gap in the Literature

A gap in the literature exists in providing information and recommendations for the implementation of new technologies in museums and visitor attractions. Ample information is available on the use of mobile technology in museums, and the marketing efforts of museums in general. However, there is little to no research available regarding the best practices for reaching museum visitors, and promoting the download of a unique museum application. This case study aims to provide information about current marketing efforts for the FLIP application, and provide suggestions for future practices to increase the number of application downloads and visitor usage.

3. Methods

3.1. Introduction of Methods

To evaluate the current overall awareness and promotional efforts for the FLIP application, data was collected in order to identify the current status of each historical site's marketing efforts of the application, as well as employee knowledge levels on the application and its use. The three main objectives used in this study include: assessing the implementation of FLIP's marketing and promotional efforts, exploring the successes and challenges of the current methods, and providing recommendations to expand and improve the use of FLIP. A case study approach was used as the method of data collection. The major components of a case study can be broken down into six main steps: creating a plan, designing and preparing the study, and collecting, analyzing, and sharing the data (Yin, 2009, p. 2). The goal of this case study is to present a series of detailed steps that will allow for another person to recreate the study themselves.

First, multiple research questions were developed as part of the first planning stage of the case study. These research questions included: what is the current process of implementing FLIP, how effective is FLIP, and what recommendations can be created to improve the use of FLIP? It was decided that a case study was the best method for collecting this data, with the purpose of defining and analyzing current and possible techniques for the marketing efforts of FLIP. The main strength of this method was its ability to use multiple approaches when collecting primary data. Possible limitations during the data collection of this case study included the variation of data collected based on time of day and day of the week that each part of the study was performed.

The next process of this case study involved designing the study itself. The unit of analysis was defined as employee knowledge and interest in FLIP, as well as current awareness efforts by each of the historical sites studied. This case study was performed with the objective of identifying the effectiveness of the current implementation methods used throughout each organization in regards to the FLIP application. An embedded, single case study design method was created, involving multiple units of analysis (Yin, 2009, p. 24). When preparing to collect the case study evidence, certain skills were defined in order to collect the best data possible. It was important to ask good questions, and be a good listener. Background knowledge on the units being studied was of high importance. The development of case study protocol involved an overview of the project objectives, access to the field study sites, specific case study questions, and an outline and formatting process for collected data (Yin, 2009, p. 66).

When collecting data, evidence is acceptable when coming from six sources: documents, archival records, interviews, direct observation, participant observation, and physical artifacts. It was important to collect multiple sources of evidence, while creating a database capable of organizing all of the information collected. In this case, primary data was collected from documents, archival records, and direct observation. Participant observation was also used as the FLIP application was tested first hand at each of the twelve historical sites. A chain of evidence was crucial in order to connect each of the units of information collected, and to draw conclusions based on the compilation of all of the data collected from each research question (Yin, 2009, p. 98).

After all of the data was collected, the next step in the process was analyzing the case study evidence. A pattern matching-logic was utilized to organize and analyze the data collected (Yin, 2009, p.126). The purpose of this paper is to share the case study conducted. The results

and findings listed below aim to provide insight and suggestions for the future marketing and implementation of the FLIP application. Three methods were used for gathering this information: a website analysis, secret shopper phone surveys, and on-site visits at each location.

3.2. Website Research

Each of the twelve historical site's webpages were analyzed in depth, with the purpose of identifying the awareness each location was creating for the FLIP application. Each link was clicked throughout the page, in search for the FLIP logo and any additional information about the app, and FLIP was entered into the site's search bar when available. The research was collected in August 2014. The research provided information as to the inclusion (or lack) of the FLIP logo on the webpage. Special attention was given to the consideration of where the FLIP logo was placed on the site, and if a direct link to the FLIP For History was presented. If the logo was was found, notes were taken as to where it was located on the page, and what information was provided about the app, if any. The results were placed in a table, noting if the website included the flip logo, where it was found, and if any additional text was included.

3.3. Telephone Secret Shopper Surveys

Telephone secret shopper surveys were performed, posing as a potential visitor and questioning the receptionist about the FLIP application. The phone survey was conducted with the intent to question employees on the availability and usage of FLIP. The calls took place in August 2014. The call evaluation script and questions began with the caller posing as a babysitter interested in bringing kids to the historical site after reading about the location in an add printed in Rochester's Democrat and Chronicle newspaper a few weeks prior. The caller noted that the article mentioned an app called FLIP, and asked if it was still available to play at the location. If the employee was aware of the availability of FLIP at the historical site, the caller continued by

asking for information on how the application works, or confirmed that the employee had no knowledge of the app. If the employee was aware of the FLIP application, they were then asked if they had experience using it themselves, and for what age group it was best recommended for use. Finally, the caller questioned what type of devices were capable of running the FLIP application, to see if the employee was aware that it will only function on the iOS operating system. Additional notes were taken noting the over all interest and enthusiasm the employee exhibited over the phone when asked questions about FLIP.

The results were placed in a chart noting each location's levels of knowledge on the app. Results were categorized based on three main questions: is the employee knowledgeable about the use of FLIP in their historical site (yes, no, or they have only heard of it), have they used it themselves (yes or no), and are they aware that it only functions on the Apple iOS platform (yes, no, or unsure).

3.4. On-site Visits

Eleven of the twelve locations were visited and information was collection during a four-week period beginning in September 2014. The on-site visits involved speaking to front desk employees about the app, and an assessment of the signage and marketing efforts on location were generated. During the initial launch of the app, each location was given a unique login code required by users to sign into the application, as well as an iPad mini with the intention to make it available for guests to use not owning an iOS device. In addition, locations were provided with multiple forms of promotional signage in the form of posters and handout cards to display at their front desk. The order of each visit was chosen at random, and roughly an hour or longer was spent at each historical site (depending on its size and level of engagement). Each visit began by searching the location for information and signage informing guests of the FLIP

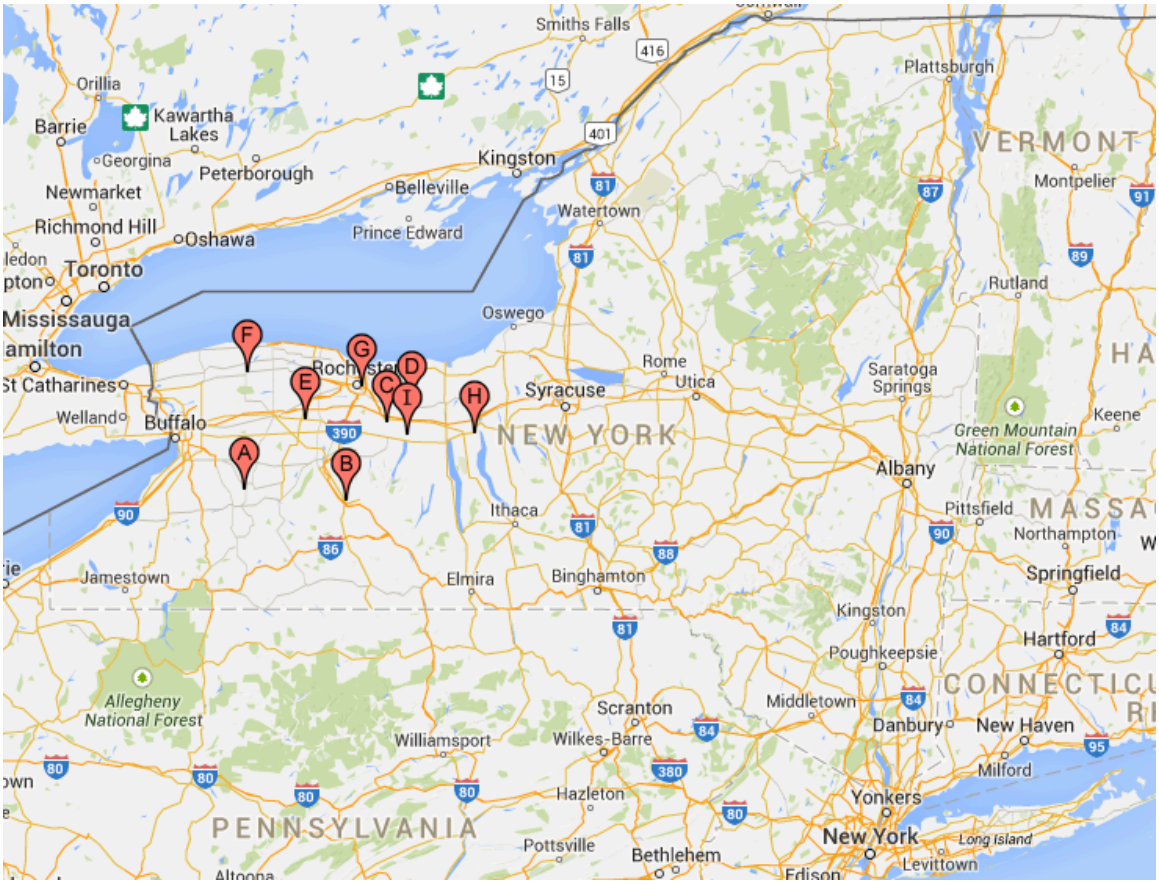
application. Front desk employees were then questioned about their knowledge of the existence of the app, and asked if they possessed the unique login code that each location was given prior to the launch of the application. Without this login code, guests would not be able to access the app. Employees were next questioned as to which devices were capable of downloading FLIP, and if their were any options for guests not owning an Apple device. Additional notes were taken noting the over all interest and enthusiasm the employee exhibited when asked questions about FLIP. Finally, the FLIP application was used completely at each site, and checked for errors or bugs. RIT was notified of any technical errors such as duplicate trivia questions, as well as exhibit changes that affected augmented reality game play.

The results were placed in a chart breaking down the experience at each location. These results noted if there was informational signage displayed at the museum, if the employee offered the provided iPad for guest use, and if the employee was aware of the unique passcode needed to engage the application.

3.5. Review of Current Data

The following data displays the nature of each of the sites studied, providing information into the unique demographics of each museum. It is important to identify factors that make up each of the historical sites in this study, by comparing data such as location, number of employees, number of visitors, hours of operation, and ticket prices. Figure 2 below displays a map indicating the location of each of the 12 historical sites involved in the FLIP application, in relation to cities such as Rochester, Syracuse, and Buffalo.

Figure 2: Map of FLIP Historical Sites



Retrieved from http://mapfling.com

A	Arcade and Attica Railroad
B	Clara Barton House
C	Ganondagan State Historic Site
D	Historic Palmyra
E	Jell-O Gallery & Museum
F	Medina Railroad Museum
G	Rochester Museum and Science Center National Susan B. Anthony Museum & House George Eastman House
H	Women's Rights National Historic Park Seneca Falls Museum of Waterways & Industry
I	Sonnenberg Gardens and Mansion State Historic Site

In figure 2, three of the sites are shown to be located directly in the city of Rochester (Rochester Museum and Science Center, National Susan B. Anthony Museum & House, and George Eastman House). It is very likely that these sites welcome a high amount of visitor traffic per year based on their locations. It is also likely that sites located further on the outskirts of New York's major cities such as the Clara Barton house and the Medina Railroad Museum experience a lower amount of visitor traffic per year. Table 1 represents the demographics of each of the twelve historical sites, in terms of number of employees and visitors, hours of operation and seasonality restrictions, and ticket pricing. Data on visitor admission was collected based on the complete year of 2012. The data reflecting the number of employees was collected in 2013. Ticket prices are displayed based on adult admission (Shear, 2013).

Table 1: Location Demographics

	Number of employees	Number of visitors	Hours of operation / Seasonality	Ticket price
Arcade and Attica	10-20	More than 10,000	Varies – Busy season July-Dec / 2 train rides a day during busy season	$15
Clara Barton	5 or less	Less than 1,000	9am-1pm year round	Free
Ganondagan	5-10	More than 10,000	9am-5pm Tues-Sun / Closed during winter	$3
George Eastman	About 100	More than 10,000	10am-5pm Tues-Sun year round	$12
Historic Palmyra	5 or less	More than 10,000	11am-4pm Tues-Thurs / Additional hours in Summer	$7
Jell-O Gallery	5-10	More than 10,000	10am-4pm Mon-Sat / Less hours in Winter	$4.50
Medina Railroad	5-10	More than 10,000	11am-5pm year round	$7
National Susan B.	5-10 & Over 100 volunteers	9,300	11am-5pm Tues-Sun	$10
RMSC	Over 20	400,000	9am-5pm Mon-Sat year round	$13
Seneca Falls	2 full time 4 part time	More than 10,000	10am-4pm Mon-Sun / Less hours in Winter	Free
Sonnenberg	20 or less	More than 10,000	9:30am-4:30pm daily / Closed during winter	$12
Women's Rights	15-20	30,000	9am-5pm year round / Summer is busy season	Free

Based on the information in Table 1, it is likely that visitor admission is impacted by the seasonal climate changes in the Finger Lakes Region. Locations offering attractions which are primarily indoors such as the George Eastman House and the Rochester Museum and Science Center offer more consistent hours year round. Locations offering primarily outdoor attractions such as Ganondagan (with various outdoor hiking trails) and Sonnenberg Gardens (with various outdoor attractions) are more likely to limit winter hours or close completely during the winter months. It also appears that locations closest to the city of Rochester are more likely to offer consistent hours, which suggests the impact that higher populations has on museum visitation. This may be due to the fact that visitors are willing to visit museums during the winter months, but are more likely to visit locations closer to home.

Table 1 exhibits a direct correlation between number of employees and number of visitors, as the museums with the highest number of employees account for some of the highest numbers of visitors. Ticket prices vary from free admission to fifteen dollars between the twelve locations. Besides the Arcade and Attica Railroad, whose admission includes a ride on one of their trains, the historical sites located nearest to the city of Rochester have the highest priced admission.

4. Findings

Each of the twelve historical sites exhibited varying amounts of employee knowledge and marketing awareness, ranging from extreme enthusiasm to a complete lack of knowledge of the application's existence. The following findings are organized based on the main objectives of the case study: assessing the implementation of FLIP's marketing and promotional efforts, and exploring the successes and challenges of the current methods. These results were then used in providing recommendations to expand and improve the use of FLIP. To assess the current implementation practices of FLIP, three methods of data collection were used at each of the twelve historical sites. These methods include: a website analysis, secret shopper phone surveys, and on-site visits at each location.

4.1. Website Findings

The first set of analyses examined the websites of each of the twelve historical sites in August 2014. Three main points were noted, including the presence (or lack) of the FLIP logo, it's placement on the website, and the inclusion of any additional text accompanying the logo. The following table illustrates the breakdown of each of these factors within their prospective location.

Table 2: Website Findings

	FLIP logo	If yes, location of logo	Additional text
Arcade and Attica *www.arcadeandatticarr.com*	No	-	-
Clara Barton House *www.redcross.org/ny/dansville*	Yes	Programs and Services tab	Brief description of FLIP and a direct link to website
Ganondagan *www.ganondagan.org*	No	-	-
George Eastman *www.eastmanhouse.org*	No	-	-
Historic Palmyra *www.historicpalmyrany.com*	No	-	-
Jell-O Gallery *www.jellogallery.org*	No	-	-
Medina Railroad *www.railroadmuseum.net*	Yes	Home page, under "Latest News" heading	Brief description of FLIP and a direct link to website (time sensitive and will continue to move further down the news section)
National Susan B. *www.susanbanthonyhouse.org*	No	-	-
RMSC *www.rmsc.org*	No	-	-
Seneca Falls *www.senecamuseum.com*	Yes	Home page, found at the top next to the site's main logo and heading (this heading remain regardless of which page is clicked on)	Additional info is found under the heading "FLIP is here" as well as a direct link to website
Sonnenberg Gardens *www.sonnenberg.org*	Yes	Home page, down a left side banner	There is no additional info posted to accompany the logo and webpage direct link
Women's Rights *www.nps.gov/wori*	No	-	-

Only 4 of the 12 museum websites examined included information on the FLIP mobile application. Of these four sites, the location and information available varies. The Clara Barton House – Chapter #1 American Red Cross website offers a direct link to both FLIP and Path Through History under the "Programs and Services" tab. There is a brief description of the app posted next to the FLIP logo, followed by a direct link to the website. The Medina Railroad Museum website includes a brief description of FLIP as well as a direct link to the FLIP website, however, it is located under the "Latest News" heading and is not a permanent link on the page. The post was written in July of 2014, and will continue to move further down the list as additional articles are posted. The Seneca Falls Museum of Waterways and Industry website offers the most information and best positioning of the FLIP application, with the logo and direct link posted on the top of the homepage, directly next to the logo and heading of the historical site (see Appendix B). The Sonnenberg Gardens & Mansion State Historic Site website includes the FLIP logo and direct link down a banner on the left side of the homepage, although there is no information posted about the app to accompany the logo (see Appendix C). The FLIP logo and link remain at the top of the page, regardless of which tab is clicked on. Additional information can be found slightly lower on the page, titled "FLIP is here."

There was no mention of the FLIP application on 8 of the 12 historical site's webpages. Four of these sites include search bars on the homepage, which yield no results when searching for FLIP, ensuring that there is no information to be found anywhere on the site. The following information provides the general structure of each museum's website, and gives some insight as to possible locations that would suit the placement of the FLIP logo: The Arcade and Attica Railroad website is simple, with various icons and informational boxes filling each page. The

Ganondagan State Historic Site website includes a section titled "Learning," which includes picture galleries, videos, news, and resources. The George Eastman House website includes sections titled "Visit" and "Education," as well as a direct link to VisitRochester, the local travel and tourism association. The Historic Palmyra website is simple, including a section titled "Links," which offers information on the Finger Lakes Regional Tourism Authority. The Jello-O Gallery and Museum is very basic, and includes a section titled "Visit." The National Susan B. Anthony Museum & House website includes a section titled "Programs," which includes information on a virtual tour offered at the site. The Rochester Museum and Science Center website offers a "For Teachers" tab, as well as a "Stay Connected" option on the homepage, promoting social media usage. The Women's Rights National Historical Park includes a section titled "Plan Your Visit," also including a "Things to do" tab.

All 12 of the historical sites offer webpages including information on current exhibits, events, and general operational information. Two thirds of the websites did not include the logo, links, or any information regarding FLIP. Although each of the webpages involved multiple tabs and sections for various types of information, the space was not being used in anyway to promote FLIP to potential visitors before their trip.

4.2. Telephone Secret Shopper Findings

The second set of analyses examined the response of employees through a telephone secret shopper survey, which each took place during weekday afternoons in August 2014. Nine female employees and two male employees were reached during this method of data collection. The main purpose of the phone call questionnaire was to collect interest and knowledge levels of employees answering the phones at each location (see Appendix D for sample survey). Data involving perceived employee interest was collected through additional notes taken immediately

after each survey, noting the employees tone of voice, willingness to give information, and general impression left with the caller at the conclusion of the conversation (see Appendix E). While results have the potential to differ based on variables such as time of day and employee schedules, each location was contacted once during a consistent block of time (weekday afternoons) and called again a maximum of three additional days if the call went unanswered. Three main points were noted, including employee awareness of the app, employee personal usage of the app, and knowledge of the strictly iOS platform.

Of the 12 historical sites studied, 11 locations were contacted by phone, while one location, Arcade and Attica Railroad, was never reached due to a lack in response after three call attempts. Of the remaining 11 sites studied, one location, the Rochester Museum and Science Center, had no knowledge of the FLIP application, and no further questions were asked. The following table illustrates the breakdown of each of these factors within their prospective location.

Table 3: Telephone Secret Shopper Findings

	Knowledge of FLIP	Personal use	Only iOS Knowledge
Clara Barton House *585-335-3500*	Yes – confident response	Yes	Yes
Ganondagan *585-742-1690*	Heard only the name	No	Yes
George Eastman *585-771-3361*	Heard only the name	No	No – also Android
Historic Palmyra *315-597-6981*	Yes – confident response	Yes	Yes
Jell-O Gallery *585-768-7433*	Yes – confident response	Yes	Unsure
Medina Railroad *585-798-6106*	Yes – confident response	Yes	Unsure
National Susan B. *585-235-6124*	Heard only the name	No	No – also Android
RMSC *585-271-4320*	No	-	-
Seneca Falls *315-568-1510*	Yes – confident response	Yes	Yes
Sonnenberg *585-394-4922*	Heard only the name	No	Yes
Women's Rights *315-568-2991*	Heard only the name	No	Unsure

The remaining 10 locations exhibited varied responses in terms of comfort and knowledge when asked about the FLIP application. Five employees expressed confidence in answering questions about FLIP, while the other five location's employees expressed only limited knowledge of the app, explaining they had heard of it but did not know but about its usage. The five employees expressing limited knowledge answered "no" to ever using FLIP before themselves, while the five employees with more information had all personally used the app. Five of the 10 sites questioned were aware that FLIP functions strictly on iOS software, while three employees were unsure, and two believed FLIP would also function on Android (George Eastman House, and the National Susan B. Anthony House). Eight of the 10 employees

who responded with prior FLIP knowledge felt that the app targeted an audience of children, while still offering educational value to guests of all ages. Two of the employees (Historic Palmyra and Ganondagan) expressed a belief that FLIP was created strictly for children. Three of the employees (George Eastman, Sonnenberg Gardens, and Women's Rights) also referenced a nearby poster when asked about the FLIP app, in some cases offering to read the information out loud to the caller.

Only three of the 11 employees surveyed (Clara Barton House, Historic Palmyra, and Seneca Falls) expressed confidence in their knowledge of FLIP, were aware of it's limited iOS platform use, and responded that they had personally used the app themselves. While each phone call averaged 3-4 minutes, the employee at Historic Palmyra was by far the most enthusiastic, speaking about the app for over 20 minutes. The employee offered answers to each of the survey questions without being asked, and explained that she purchased her iPhone for the sake of using the app while at work.

There was a connection between employee knowledge and employee interest; the more information a person had, the more excited they were to teach the caller about it. The findings of this portion of the study suggest that employees with direct use of the FLIP application had more knowledge of its workings. The findings also suggest that without direct use of the application, employees did not express confidence when asked questions about the app by potential visitors, and were less likely to known details pertaining to its use such as the correct operating system.

4.3. On-Site Findings

The third and final set of analyses provided first-hand data collection on-site at eleven of the twelve historical sites. One location, Arcade and Attica Railroad, was not visited due to the lack of telephone response. Each of the remaining 11 locations was visited during a four-week

period beginning in September 2014. Each visit lasted an average of one hour, allowing for the FLIP application activities to be played to completion. Results from the on-site visits were varied, each location offering a different mix of promotion and knowledge. The main goal in visiting these sites was to experience the FLIP application first hand, as any museum guest with or without prior knowledge of the app would experience. Three main points were noted, including the presence of FLIP related signage, employee knowledge of the iPad available for visitor use, and employee knowledge of the unique numerical passcode provided to each location. Additional notes were taken regarding the overall experience (see Appendix F). The table below illustrates the breakdown of each of these factors within their prospective location.

Table 4: On-site Findings

	Signage	iPad available	Numerical Passcode info
Clara Barton House	Yes	Yes	Yes
Ganondagan	No	No	No
George Eastman	No	No	No
Historic Palmyra	Yes	Yes	Yes
Jell-O Gallery	Yes	No	No
Medina Railroad	Yes	Yes	No
National Susan B.	Yes	No	Yes
RMSC	No	No	No
Seneca Falls	Yes	Yes	Yes
Sonnenberg	Yes	No	Yes
Women's Rights	Yes	Yes	Yes

4.3.1. Signage

Of the 11 sites visited, three locations failed to present any type of signage throughout the museum. These locations (George Eastman House, Ganondagan, and RMSC) also exhibited little to no knowledge when asked about FLIP. The employee at RMSC had never heard of the app, while the employee at Ganondagan has heard of FLIP, but had admittedly no knowledge on its workings, and the employee at the George Eastman house offered a small brochure stored behind her desk with additional information. The remaining eight locations promoted FLIP through various forms of signage, ranging from a pile of small handouts found at the check-in desk, to three posters hung throughout the site. Where some locations offered a large amount of noticeable signage at the front door and throughout the exhibit, others required more probing and questioning about the app.

Sonnenberg Gardens displayed the most signage, with three large posters hung at the front entrance and throughout their site, as well as handouts at the front desk. Historic Palmyra displayed a large, wall-sized poster, as well as handouts at the front door. The Women's Rights National Historic Park displayed two posters, one of which was located in a "special programs" glass case on the sidewalk outside, in addition to handouts at the front desk. Both the Clara Barton House and the Medina Railroad Museum displayed two posters, one at the front door and a second at the front desk. The National Susan B. Anthony House and Jell-O Museum both displayed one poster at the front door. While most of the museums displaying signage about FLIP did so in very noticeable places near the entrance of the site, it should be noted that placement is almost as important as hanging a poster in general. For example, Seneca Falls Museum of Waterways and Industry hung a poster, however it was hung on the backside of the front door just off the floor, and went unseen until exiting the museum.

4.3.2. Availability of iPad

The remaining information involving iPad and passcode availability was gathered through communication with each front desk employee. In most cases, signs were displayed in noticeable areas, allowing for a natural conversation about the FLIP app, leading to the remaining questions about an available iPad and passcode details. In cases where there was no signage posted, (George Eastman House, Ganondagan, and RMSC) general questions were asked to the employee based on knowledge of the app from the Democrat and Chronicle newspaper. Of the 11 sites visited, five locations offered use of the iPad mini that was provided to the museum during the launch of the app. The Clara Barton House, Seneca Falls Museum, and Women's Rights National Historic Park each offered use of the iPad, which was located behind the front desk. The Medina Railroad Museum also had the iPad behind the front desk, however it was uncharged. Historic Palmyra did not have a WiFi connection in their museum, but did have the provided iPad behind the front desk. The remaining six locations had no knowledge of the iPad that they were provided with, and did not offer a solution as to what would happen if visitors wanted to use the FLIP app but did not have an iOS device.

4.3.3. Availability of Passcode Info

Passcode information results were split, with six of the locations having access to the passcode needed to engage the app, while five locations either knew nothing of the passcode, or had incorrect information. The George Eastman House, Jell-O Museum, Medina Railroad Museum, and RMSC each had no knowledge of the passcode necessary to use the FLIP application. The Ganondagan front-desk employee was aware that a passcode was necessary, but incorrectly believed it to be "Ganondagan." The remaining six locations each had access to the

required numerical passcode, although both the Woman's Rights National Historical Park and Susan B. Anthony House employees believed the passcode may also be "visit."

The findings of this portion of the study suggest that employees working in locations without signage posted had no knowledge about the availability of the provided iPad, or the passcode information. It can thus be suggested that employees aware of the provided iPad are much more likely to know the necessary passcode, with four out of five employees knowing both pieces of information. When comparing data from each of the methods used in this study, it is probable that employee knowledge directly relates to the visitor marketing efforts being applied. Employees working at locations who provided FLIP information on their websites in addition to signage on-site were more likely to offer information over the phone, and at the front desk.

4.4. Exploring the Successes and Challenges of the Current Implementation Methods

Taken together, these results suggest that there is a strong association between online and print marketing efforts, and employee experience with FLIP, thus creating knowledgeable employees on the various aspects of the app. The Clara Barton House and Seneca Falls Museum both completed all aspects of the current FLIP marketing efforts, by including FLIP information on their website, and displaying signage on location. In general, therefore, it seems that the use of these marketing strategies have also provided employees with the knowledge necessary to promote FLIP, as both locations provided accurate information during the secret shopper phone survey, and on-site visit. The remaining historical sites varied in terms of FLIP awareness and experience.

In addition to employee experience levels with the application, marketing efforts at each of the sites varied. While experienced, on-duty employees have the potential to be positive asset for promoting the app to visitors, there does not appear to be a high amount of visitor traffic with

existing knowledge of FLIP. Numerous employees noted the fact that they had not experienced any visitors asking about FLIP on their own regards. With only one third of participating sites including the FLIP logo on their webpage, many of the sites have not utilized a majority of the marketing efforts provided to them. In summary, these results show that there is still a large information gap between visitors and the existence of the FLIP application.

5. Conclusion and Recommendations

5.1. Conclusion

This study set out to determine the current overall awareness and promotional efforts for the Finger Lakes Interactive Play mobile application. Each of the twelve historical sites varied in terms of awareness and experience in regards to the FLIP application. Given the historical and educational nature of each site studied, the results regarding each site's involvement and interaction with FLIP were somewhat surprising. Only one-third of the locations included information regarding their involvement with FLIP on their website, while the remainder made no mention of the application. A small portion of the locations (under one-third) exhibited knowledge of all basic aspects of the FLIP location over the phone. Roughly two-thirds of the locations failed to offer all aspects of the on-site marketing efforts made available by the FLIP initiative, though the use of provided equipment such as signage, individual iPads, and unique passcodes.

Only two of the twelve historical sites studied exhibited involvement with all aspects of the current FLIP marketing efforts, including online, phone, and on-site awareness. The results from these sites, both located in rural locations, suggest the possibility that the alternate urban locations were less likely to recognize a benefit in utilizing the application for the promotion of their site. These marketing strategies allowed for the possibility for incoming guests to be made aware of the use of the FLIP application, in addition to providing employee knowledge on the app.

These findings suggest that there is benefit developed through the combination of online and print marketing efforts in correlation with employee experience levels with the application in use. The findings of this study have suggested the importance of first-hand employee experience,

in regards to providing knowledge to visitors about new mobile technologies. The study shows that employees who have participated with a mobile application are capable of providing better guidance to potential application users. Additional findings have suggested that the use of website and print marketing provide employees with application knowledge.

Some possible explanations for the varied findings may lie in the nature of the sites involved in the FLIP project. There is a wide gap between location, number of employees, and number of visitors per year. It is possible that the majority of the sites located in the downtown Rochester area may not see the benefit of promoting FLIP at their already busy locations. Additionally, it is possible that some of the smaller, volunteer-run locations may not have the resources necessary to properly support the application.

5.2. Recommendations

As noted in the literature, it is important to engage visitors from museums of all sizes with activities that can be utilized, before, during, and after the visit. Providing visitors with an aspect of the FLIP website that can be used before and after the visit would enhance the overall visitor experience. Social media and viral marketing offer additional, low to no cost ways to further expand the usage of FLIP. Some suggested strategies include: creating a FLIP Facebook page where app users can check in at each location, collecting email address from those who download the FLIP app for use in future marketing projects, and adding an “invite a friend” option to the app in order to assist word of mouth advertising.

It is suggested that in addition to focusing on marketing efforts aimed at potential visitors, additional employee training would also be beneficial. Continued visits to on-site locations where employees are given further education on the FLIP application and it’s uses would have the potential to greatly increase employee knowledge and interest. It is also

suggested that additional information regarding each sites numerical passcode and iPad availability be made available to employees.

5.3. Future Studies

A challenge to the validity of data used in this case study was the potential for a wide array of findings based on a variety of employee knowledge. Where some of the findings are more concrete (website inclusion of FLIP logo, signage on-site, etc.) other findings involving employee response may vary based on the employee on duty at the time of the study. A further study with more focus on multiple site-visits, which allow for additional employee interaction, is therefore suggested. A majority of the sites lacked important information needed by visitors to experience FLIP. A possible explanation for these results may be the lack of adequate employee training in regards to the FLIP application. Only five of the eleven employees interviewed had any experience using the application first hand. These findings, however, have the potential to vary day by day based on number of employees and schedules.

It is suggested that future research focuses on the on-site aspect of data collection, involving not only more employee interaction, but also visitor interaction. Visitor surveys have the potential to inform museums and the FLIP creators as to reasons why they chose to or chose not to download and use the FLIP application. This information has the ability to provide additional findings that can aid in the further development of the implementation of the Finger Lakes Interactive Play mobile application.

References

Accelerating our transformation: Year 2 [PDF]. (2012, September). Retrieved April 11, 2015, from http://regionalcouncils.ny.gov/themes/nyopenrc/rc-files/fingerlakes/fingerlakes_2012progressreport.pdf

Bolchini, D., Garzotto, F., & Paolini, P. (2007). Branding and communication goals for content-intensive interactive applications. Paper presented 173-182. doi:10.1109/RE.2007.60

BonDurant, R., Mullen, J., Chamberlain, A., & Books24x7, I. (2012). Marketing and mobile apps: Best practices for communicating with your customers on the go. Norwood, Mass.: Books24x7.com.

Bruner, G. C., & Kumar, A. (2005). Explaining consumer acceptance of handheld internet devices. *Journal of Business Research,* 58(5), 553-558. doi:10.1016/j.jbusres.2003.08.002

Caldwell, N., & Coshall, J. (2002). Measuring brand associations for museums and galleries using repertory grid analysis. *Management Decision,* 40(4), 383-392.

Carmen, C., & María José, G. (2008). The role of technological and organizational innovation in the relation between market orientation and performance in cultural organizations. *European Journal of Innovation Management,* 11(3), 413-434. doi:10.1108/14601060810889035

Cauberghe, V., & De Pelsmacker, P. (2010). Advergames. Journal of Advertising, 39(1), 5-18. doi:10.2753/JOA0091-3367390101

Çeltek, E. (2010). Mobile advergames in tourism marketing. *Journal of Vacation Marketing,* 16(4), 267-281. doi:10.1177/1356766710380882

Charitonos, K., Blake, C., Scanlon, E., & Jones, A. (2012). Museum learning via social and mobile technologies: (how) can online interactions enhance the visitor experience? British Journal of Educational Technology, 43(5), 802-819. doi:10.1111/j.1467-8535.2012.01360.x

Chen, K., Hsu, Y., & Wu, C. (2012). Mobile phone applications as innovative marketing tools for hotels. *International Journal of Organizational Innovation* (Online), 5(2), 116.

Economou, M., & Meintani, E. (2011, May). Promising beginnings? Evaluating museum mobile phone apps. In Rethinking Technology in Museums Conference Proceedings (pp. 26-27).

Falk, J. H., & Dierking, L. D. (2000). *Learning from museums: Visitor experiences and the making of meaning*. Altamira Press.

FLREDC announces New Mobile App to Highlight Historic Tourism Attractions in New York's Finger Lakes Region. (2014, July 17). Retrieved October 26, 2014, from http://regionalcouncils.ny.gov/finger-lakes/071714/historic-tourism-attractions-finger-lakes

Goins, E., & Egert, C. (2013). Moving beyond mobile tours: Creating hybrid spaces through narrative and gameplay in the museum collection. Paper presented 1 425-428. doi:10.1109/DigitalHeritage.2013.6743773

Governor Cuomo unveils New York's "Path Through History" to support tourism and Economic Development, and Highlight the State's Historic Past [Press release]. (2012, August 28). Retrieved April 11, 2015, from http://www.governor.ny.gov/news/governor-cuomo-unveils-new-yorks-path-through-history-support-tourism-and-economic-development

Hahn, J. (2012). Mobile augmented reality applications for library services. *New Library World,* 113(9/10), 429-438. doi:10.1108/03074801211273902

Hausmann, A. (2012). The importance of word of mouth for museums: An analytical framework. *International Journal of Arts Management,* 14(3), 32-43.

History of Empire State Development. (n.d.). Retrieved April 11, 2015, from Empire State Development website: http://esd.ny.gov/AboutUs/History.html

Hou, H., Wu, S., Lin, P., Sung, Y., Lin, J., & Chang, K. (2014). A blended mobile learning environment for museum learning. *Journal of Educational Technology & Society,* 17(2), 207.

Hsu, T., Ke, H., & Yang, W. (2006). Knowledge-based mobile learning framework for museums. *The Electronic Library,* 24(5), 635-648. doi:10.1108/02640470610707240

Hyun, M. Y., Lee, S., & Hu, C. (2009). Mobile-mediated virtual experience in tourism: Concept, typology and applications. *Journal of Vacation Marketing,* 15(2), 149-164. doi:10.1177/1356766708100904

Jones, C. (2014, April 7). Apple's U.S. Smartphone Market Share Holding Steady Against Every Competitor. Retrieved April 19, 2015, from http://www.forbes.com/sites/chuckjones/2014/04/07/apples-u-s-smartphone-market-share-holding-steady-against-every-competitor/

Kennedy-Eden, H., & Gretzel, U. (2012). A taxonomy of mobile applications in tourism.

Kotler, N., & Kotler, P. (1998). Museum strategy and marketing. San Francisco.

Kurkovsky, S., & Harihar, K. (2006). Using ubiquitous computing in interactive mobile marketing. *Personal and Ubiquitous Computing,* 10(4), 227-240. doi:10.1007/s00779-005-0044-5

Lagrosen, S. (2003). Online service marketing and delivery: The case of Swedish museums. *Information Technology & People,* 16(2), 132-156. doi:10.1108/09593840310478667

Law, R., & Hsu, C. H. (2006). Importance of hotel website dimensions and attributes: perceptions of online browsers and online purchasers. *Journal of Hospitality & Tourism Research*, 30(3), 295-312.

Maher, J. K., Clark, J., & Motley, D. G. (2011). Measuring museum service quality in relationship to visitor membership: The case of a children's museum. International Journal of Arts Management, 13(2), 29-42.

McIntyre, M. H. (2004). Learning journeys: Using technology to connect the four stages of meaning making.

McLean, F. (1997). Marketing the museum. *Psychology Press.*

Mickaiel, I. (2011, August 31). Mobile the new black for travel | ZDNet. Retrieved April 4, 2015, from http://www.zdnet.com/article/mobile-the-new-black-for-travel/

Milton Glaser: His heart was in the right place. (2011, July 7). Retrieved April 11, 2015, from The Telegraph website: http://www.telegraph.co.uk/culture/art/art-features/8303867/Milton-Glaser-his-heart-was-in-the-right-place.html

Mo Kwon, J., Bae, J., & Blum, S. C. (2013). Mobile applications in the hospitality industry. *Journal of Hospitality and Tourism Technology,* 4(1), 81-92. doi:10.1108/17579881311302365

Modzelewski, F. M. (2000). Finding a cure for viral marketing. Direct Marketing News, 11(09), 100.

Naismith, L., & Smith, M. P. (2009). Using mobile technologies for multimedia tours in a traditional museum setting. Mobile learning: Transforming the delivery of education and

training, 247-264.

Number of apps available in leading app stores 2014 | Statistic. (2014). Retrieved May 4, 2015, from http://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/

Palumbo, F., Dominici, G., & Basile, G. (2013, June). Designing a mobile app for museums according to the drivers of visitor satisfaction. In Recent Advances in Business Management and Marketing-Proceedings of the 1st International Conference on Management, Marketing, Tourism, Retail, Finance and Computer Applications (MATREFC'13). Dubrovnik, Croatia, WSEAS Press.

Path Through History marketing plan. (2012, September). Retrieved April 11, 2015, from http://www.nylandmarks.org/pdfs/events/ILNY_Path_Through_History_Marketing_Plan.pdf

Path Through History. (n.d.). Retrieved October 26, 2014, from http://www.paththroughhistory.ny.gov

Phelps, J. E., Lewis R., Mobilio, L., Perry, D., & Raman, N. (2004). Viral marketing or electronic word-of-mouth advertising: Examining consumer responses and motivations to pass along email. *Journal of Advertising Research,* 44(4), 333-348. doi:10.1017/S0021849904040371

Raptis, D., Tselios, N., & Avouris, N. (2005). Context-based design of mobile applications for museums: A survey of existing practices. Paper presented at the 153-160. doi:10.1145/1085777.1085803

Restart the heartbeat of I LOVE NY [White paper]. (n.d.). Retrieved April 11, 2015, from http://thearf-org-aux-assets.s3.amazonaws.com/ogilvy/cs/Ogilvy-09-CS-NewYork.pdf

Rowley, J. (1999). Measuring total customer experience in museums. *International Journal of Contemporary Hospitality Management,* 11(6), 303-308. doi:10.1108/09596119910281801

Sharples, M., FitzGerald, E., Mulholland, P., & Jones, R. (2013). 9 Weaving Location and Narrative for Mobile Guides.

Shear, A. (2013). *Finger Lakes Path Through History: An Exploration Into Mobile Marketing for Tourism.* Unpublished manuscript, Rochester University of Technology, Rochester, NY.

Siguaw, J. A., Simpson, P. M., & Enz, C. A. (2006). Conceptualizing innovation orientation: a framework for study and integration of innovation research. *Journal of Product Innovation Management,* 23(6), 556-574.

Smith, R. E., & Swinyard, W. R. (1982). Information response models: An integrated approach. *The Journal of Marketing,* 81-93.

Spence, E. (2014, August 3). IOS Users Seven Times More Active Than Android Users, Suggests Net Applications. Retrieved April 19, 2015, from http://www.forbes.com/sites/ewanspence/2014/08/03/ios-users-seven-times-more-active-than-android-users-suggests-net-applications/

Summer in NY State. (n.d.). Retrieved April 11, 2015, from I LOVE NY website: http://iloveny.com/summer.aspx

Sung, Y. T., Hou, H. T., Liu, C. K., & Chang, K. E. (2010). Mobile guide system using problem□solving strategy for museum learning: a sequential learning behavioural pattern analysis. *Journal of computer assisted learning,* 26(2), 106-115.

The Finger Lakes REDC. (n.d.). Retrieved April 11, 2015, from Regional Economic Development Councils website: http://regionalcouncils.ny.gov/content/finger-lakes

Tsai, H., & Sung, K. (2012). Mobile applications and museum visitation. *Computer,* 45(4), 95-98. doi:10.1109/MC.2012.143

V&A Podcast – Way Finding. (n.d.). Retrieved May 5, 2015, from http://www.vam.ac.uk/content/articles/v/v-and-a-podcast-way-finding/

Verkasalo, H., López-Nicolás, C., Molina-Castillo, F. J., & Bouwman, H. (2010). Analysis of users and non-users of smartphone applications. *Telematics and Informatics,* 27(3), 242-255. doi:10.1016/j.tele.2009.11.001

Visiting New York State for the first time? (n.d.). Retrieved April 20, 2015, from http://www.newyorkstatedestinations.com

Want, R. (2009). When cell phones become computers. *Pervasive computing,* IEEE, 8(2), 2-5.

Welcome to the new New York. (n.d.). Retrieved April 11, 2015, from Regional Economic Development Councils website: http://regionalcouncils.ny.gov/

Weng, E., Parhizkar, B., Ping, L., & Lashkari, A. H. (2011). Augmented reality for museum artifacts visualization. International Journal of Computer Science and Information Security, 9(5), 174-185.

Wilson, R. F. (2000). The six simple principles of viral marketing. *Web Marketing Today,* 70(1), 232.

Wooldridge, D., & Schneider, M. (2010). The business of iPhone app development: Making and marketing apps that succeed. New York, NY: Apress.

Wu, X., Chen, Q., Zhou, W., & Guo, J. (2010). A review of Mobile Commerce consumers' behaviour research: consumer acceptance, loyalty and continuance (2000-2009). *International Journal of Mobile Communications*, *8*(5), 528-560.

Yin, R. (2009). Case study research: Design and methods (4th ed.). Los Angeles, CA: Sage Publications.

Appendix A: FLIP locations and contact information

Arcade and Attica Railroad
278 Main Street, Arcade, NY 14009
585-492-3100
www.arcadeandatticarr.com

Clara Barton House – Chapter #1 American Red Cross
57 Elizabeth Street, Dansville, NY 14437
585-335-3500
www.redcross.org/ny/dansville

Ganondagan State Historic Site
1488 State Route 444, Victor, NY 14564
585-742-1690
www.ganondagan.org

George Eastman House – International Museum of Photography & Film
900 East Ave, Rochester, NY 14607
585-771-3361
www.eastmanhouse.org

Historic Palmyra
122 William Street, Palmyra, NY 14522
315-597-6981
www.historicpalmyrany.com

Jell-O Gallery & Museum
23 East Main Street, Le Roy, NY 14482
585-768-7433
www.jellogallery.org

Medina Railroad Museum
530 West Avenue, Medina, NY 14103
585-798-6106
www.railroadmuseum.net

National Susan B. Anthony Museum & House
17 Madison Street, Rochester, NY 14608
585-235-6124
www.susanbanthonyhouse.org

Rochester Museum and Science Center (RMSC)
657 East Ave., Rochester, NY 14607
585-271-4320

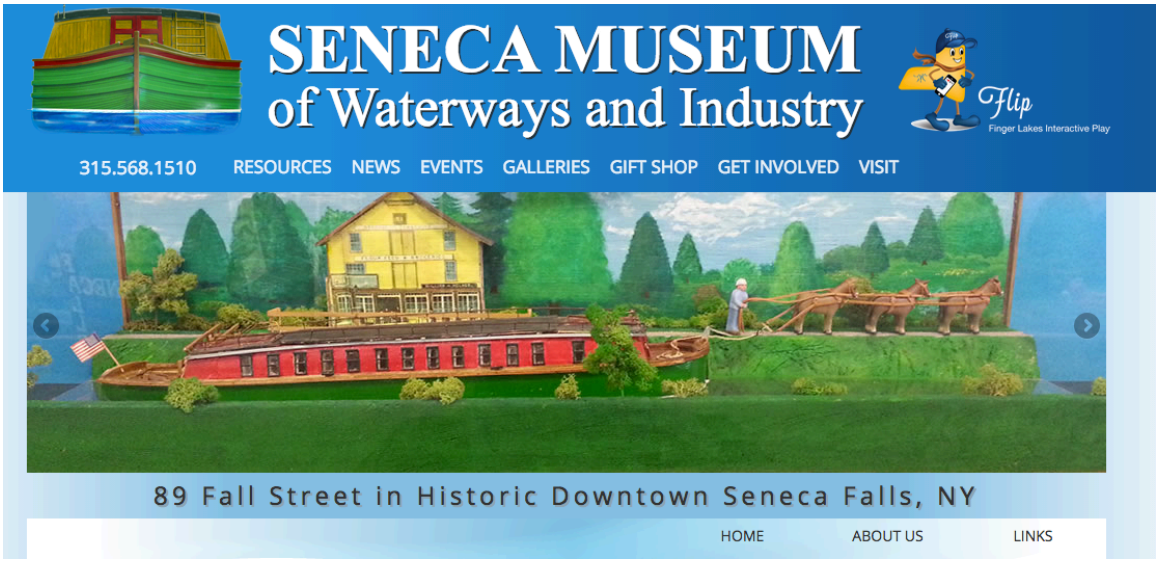
www.rmsc.org

Seneca Falls Museum of Waterways & Industry
89 Fall Street, Seneca Falls, NY 13148
315-568-1510
www.senecamuseum.com

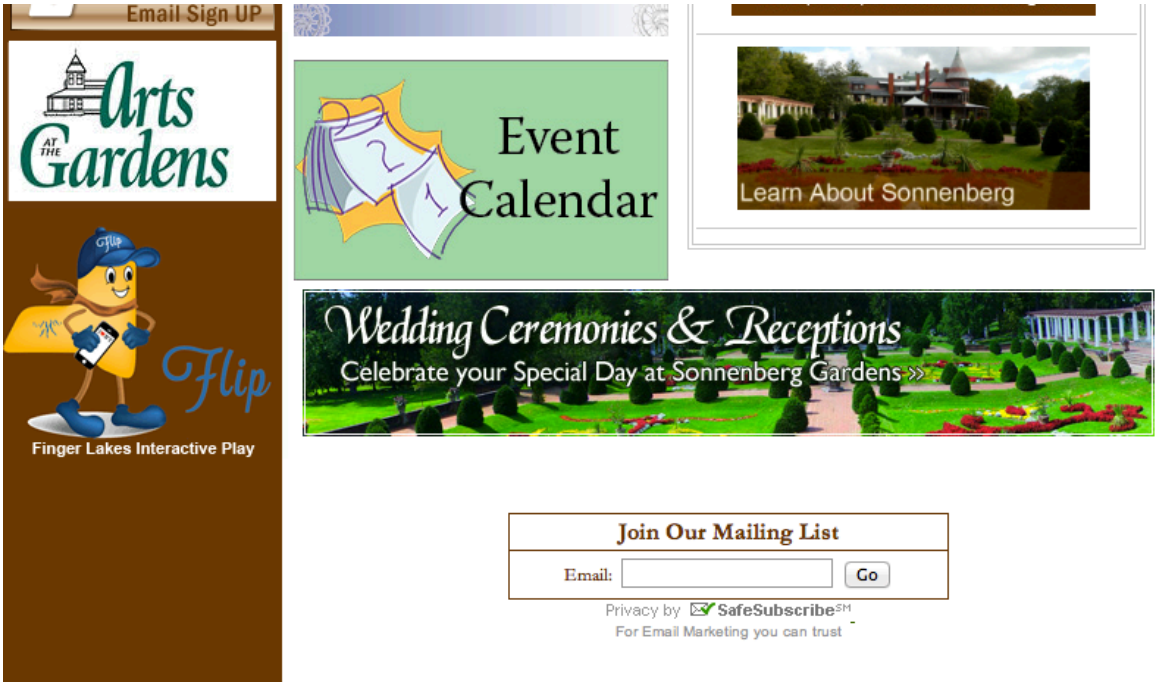
Sonnenberg Gardens and Mansion State Historic Site
151 Charlotte St Canandaigua, NY 14424
www.sonnenberg.org

Women's Rights National Historic Park
136 Fall Street, Seneca Falls, NY 13148
315-568-2991
www.nps.gov/wori

Appendix B: Seneca Museum Webpage



Appendix C: Sonnenberg Gardens Webpage



Appendix D: Phone Secret Shopper Survey Script

Hi I was calling with a couple of questions on something I found in the newspaper the other day.

- I saw on the internet that you are one of the path through history sites can I still play the flip app at your site?
- I'm a nanny, is it something for kids or what age group?
- Can you tell me how it works?
- Have you used it yourself?
- Does it work on both Apple and Android phones?

Appendix E: Phone Secret Shopper Survey – Additional Notes

Clara Barton House – Chapter #1 American Red Cross

After being transferred to the executive director, she seemed to have knowledge of the app, but wanted to stress that their location was not nearly as large as the other museums that use the app. She was friendly and willing to answer each question, although didn't offer much detail

Ganondagan State Historic Site

He didn't seem to know much about it, seemed a bit like he wanted to get me off the phone and get me to look up info online myself

George Eastman House

She didn't know much about it but did have some info about FLIP right at her desk. Very friendly and happy to try to and answer my questions

Historic Palmyra

She was VERY enthusiastic about both her historical site and the app. I did not even have to ask each question because she answered them. Was very excited about the app and bringing kids to her museum to play it. She was knowledgeable about FLIP and Path Through History

Jell-O Gallery and Museum

There was some knowledge of FLIP, but no real enthusiasm from the woman on the phone. I felt a bit like I was bothering her asking questions

Medina Railroad Museum

She had basic knowledge of what the app could do and was pretty helpful when I was asking her questions about it

National Susan B. Anthony Museum & House

Receptionist had heard of FLIP, but had no information about the app. She unsuccessfully tried multiple times to connect me to a manger who she thought would know more about it, and apologized for not having more information

Rochester Museum & Science Center

Receptionist never heard of the app, she transferred me to someone who should know more, and the next woman had never heard of it either

Seneca Falls Museum of Waterways and Industry

He seemed to have a decent amount of experience with the app and was happy to talk about it once I started asking questions

Sonnenberg Gardens & Mansion State Historic Site

At first she wasn't sure what I was talking about, but she had some paperwork on it (or possibly the poster?) and directed me to the website. She was friendly but really not very knowledgeable

Women's Rights National Historical Park

Was happy to answer questions to the best of her knowledge but did not show any real interest

Appendix F: On-Site Additional Notes

Clara Barton House – Chapter #1 American Red Cross

This site is not an actual museum so it is a little harder to use the app here, but the woman behind the desk was very happy to help

Ganondagan State Historic Site

The man working at the welcome center did not seem very interested in FLIP. He said he was hoping the augmented reality was a little more advanced

George Eastman House

I spoke to the tour guide about FLIP and she was extremely interested in seeing how it worked and learning more. She put me in contact with various employees who would be able to help. Woman at the desk was also interested to ask how I enjoyed using the app at their site

Historic Palmyra

She was by far the most enthusiastic about FLIP. I brought a large stand up sign which she was excited to have on display, and talked about taking it with her when she goes to speak at different meetings such as Rotary and at various campuses

Jell-O Gallery and Museum

The women at the desk seemed very interested in having an iPad available to use, but seemed sure that there was not one there. When I mentioned FLIP, one woman knew it

was what was mentioned in the posted, but didn't seem to have any first hand knowledge on the app

Medina Railroad Museum

This site is one large room, which made it very easy and intuitive to use FLIP

National Susan B. Anthony Museum & House

The app was easy to use at this site and most employees seemed to have at least basic knowledge of the app

Rochester Museum & Science Center

There were numerous school groups touring the museum which could have found the app very useful

Seneca Falls Museum of Waterways and Industry

I accidentally forgot to download the games before arriving to Seneca Falls and was not able to use wifi at the site. There is a nearby hotel called Clarence Hotel who was more than happy to let me use their wifi, and would be a great site for promoting FLIP to guests in town who are looking for the numerous historical sites found around Seneca Falls. The woman behind the desk was very interested in seeing how the app worked

Sonnenberg Gardens & Mansion State Historic Site

The woman working in the mansion was very excited to see how the app works. She said there was a group of younger kids in recently who were playing with the app, and asking her questions about it. Two of the Augment images do not appear to be on display anymore

Women's Rights National Historical Park

I accidentally forgot to download the games before arriving to Seneca Falls and was not able to use Wi-Fi at the site. There is a nearby hotel called Clarence Hotel who was more than happy to let me use their Wi-Fi, and would be a great site for promoting FLIP to guests in town who are looking for the numerous historical sites found around Seneca Falls